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ABSTRACT

The contribution of competency-based training (CBT) to the development of an adaptable and flexible workforce was examined by analyzing documents and gathering data from teachers, industry representatives, enterprises, and students in metropolitan and nonmetropolitan sites in two Australian states: Victoria and Queensland. The study focused on CBT's educational worth in the metals and hospitality industries and its influence on educational practice. The degree to which CBT itself can be identified as contributing to development of an adaptable, flexible workforce was concluded to be problematic and less significant than the contributions of the broader vocational education and training reform movement and the instructional and curriculum practices that existed before CBT's introduction. Antagonism between CBT and the development of adaptability and flexibility was discovered and attributed to CBT's focus on outcomes rather than process. A series of recommendations for boosting CBT's contribution to development of an adaptable, flexible workforce by modifying existing curricula, assessment, and teaching practice were offered. The recommendations related to curriculum focused on intents, content, and the quality of learning experiences. The recommendations regarding assessment addressed validity, reliability, and incentives for learning. The recommendations regarding teachers' practice emphasized broadening and deepening teachers' knowledge. (MN)

THE CBT DECADE

Teaching for flexibility and adaptability

An overview



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THE CBT DECADE
Teaching for flexibility
and adaptability

AN OVERVIEW

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Preface

It is now ten years since competency-based training (CBT) was introduced as part of the reform agenda for the Australian vocational education system. During this decade there have been significant changes in the structure and organisation of the country's vocational education system. Changes include a broadening of the field of providers of vocational education characterised by the shift from essentially public provision (TAFE) to a vocational education and training (VET) system including both public and private providers. There has also been a shift from national prescriptions founded on industrial awards to a more enterprise-based focus. However, enduring through the decade is the key governmental goal for vocational education embodied in CBT: to develop an adaptable and flexible workforce capable of competing globally.

The project reported in this overview document sought to determine the ways in which CBT has contributed to the development of an Australian workforce that is adaptable and flexible. The project gathered data from respondents involved in two industries (Metals and Hospitality) in two States (Victoria and Queensland). The analyses of data were used to identify the impact of the introduction of CBT on curriculum, assessment and instructor's practice, and to determine the educational worth of CBT in realising government policy goals. Issues examined in the project include the following:

- ❖ the effect on the VET system of the implementation of CBT
- ❖ the impact of CBT on the curriculum processes within VET
- ❖ the impact of CBT on assessment practices
- ❖ the impact of CBT on teachers' work
- ❖ the efficacy of CBT from industry, enterprise and student perspectives
- ❖ the influence of CBT on the development of an adaptable and flexible workforce
- ❖ ways forward from the decade of CBT

This overview document comprises a set of findings arising from the investigation, a synopsis of the study, a brief overview of the rationale for the investigation and the means by which it was conducted. It also provides a summary of findings and recommendations for future policy and practice. The full report is published as a separate document.

Executive summary

This executive summary presents the key findings of the study, and outlines the contribution competency-based training (CBT) is currently making to the development of an adaptable and flexible workforce. Moreover, it provides a set of recommendations that are intended to contribute to the governmental policy goal of adaptability and flexibility in the workforce.

Key findings

- ❖ A range of factors within the current vocational education provisions was identified as being likely to promote adaptability and flexibility.
- ❖ However, the degree to which CBT itself can be identified as contributing to this outcome is problematic.
- ❖ The contributions of the broader vocational education and training (VET) reform movement, along with the instructional and curriculum practices that existed prior to the introduction of CBT (and which have continued to this time), were more significant to the development of an adaptable and flexible workforce than CBT specifically.

These findings are now elaborated upon below.

Curriculum

Factors identified in the development of curriculum associated with securing adaptability and flexibility were as follows:

- ❖ determination of curriculum intents (aims, goals and objectives) and content involving industry /enterprises assists in making the goals for, and content of, courses relevant
- ❖ currency of teachers' knowledge of the requirements for the workplace assists the development of transferable knowledge in students
- ❖ experience in the workplace is important for students in enabling them to develop knowledge applicable to workplace settings. The development of understanding and higher order procedures is particularly important for workplace performance
- ❖ a combination of instructional approaches (e.g. group learning, self-directed learning, teacher guided activities) provide the student with access to problem-solving skills, the reinforcement of knowledge, opportunities to work with others and access to knowledge which learners cannot discover by themselves. Such outcomes of instruction assist the development of adaptability and flexibility
- ❖ project work, self-directed learning and combinations of on- and off-the-job experiences have the potential to develop in students the forms of knowledge which permit transfer and, hence, adaptability and flexibility

Assessment

Factors associated with assessing students' attainment of the knowledge required for flexibility and adaptability follow.

- ❖ Performance measures must reflect the complexity, depth, routineness and non-routineness of the vocational activities being assessed.
- ❖ Assessment must include judgements of the ability of students to engage in non-routine activities, more than just routine activities.
- ❖ Assessment must account for situational factors, with validity found in their application. For instance, on-the-job assessment is likely to be useful to indicate validity in terms of authenticity.
- ❖ Dispositional factors (values, attitudes) need to be assessed as they underpin the thinking and acting processes valued by government, industry and enterprises alike.
- ❖ Multiple learning outcomes need to be assessed as they reflect requirements for work practice (e.g. project work as the basis for assessment).

Teachers' work

Factors associated with teachers' work that contribute to the development of this knowledge were identified as follows.

- ❖ Teachers' involvement in selecting and providing appropriate kinds of experiences for students is essential in determining how these experiences are best organised for a given group or individual.
- ❖ Teachers require currency of knowledge about kinds of settings (e.g. different kinds of workplaces) in order to develop appropriate experiences for students.
- ❖ Direct engagement with students is required for teachers in order for them to understand student needs, to organise experiences and to provide guidance appropriate to students' level of development.
- ❖ A broad role is required for teachers in identifying and determining needs at the situational level and responding to those needs.
- ❖ Teachers must value a strong student focus in organising appropriate experiences, tailoring arrangements to the needs of the learner, and providing support and guidance underpinned by currency of knowledge.

Contributions to developing adaptability and flexibility

Associated with these findings, the contributions to developing adaptability and flexibility are identifiable from three sources: (i) CBT itself; (ii) the broader reform movement, and (iii) existing practice, as stated in the following paragraphs.

Contributions of CBT itself

- ❖ Shifting the focus for determining curriculum intents and content to outside the vocational education system has enhanced the relevance of what was taught.
- ❖ Adoption of accreditation and registration processes has pressed for the use of external advice and for teacher currency. These processes have contributed to the enhanced currency of the content as well as the goals for learning.

Contributions of the broader reform movement

- ❖ Increased interactions between providers and enterprises have resulted in the development of clearer goals and content for courses.
- ❖ Increased opportunities for students to engage in workplace experiences have increased their potential to develop appropriate knowledge.
- ❖ Self-paced and text-based learning experiences pressed capable learners into higher orders of learning.
- ❖ Greater emphasis on individualised learning resulted in meeting learners' needs.
- ❖ Broadening of teachers' industry engagement with training through market-based reforms provides a currency for teachers as curriculum makers and instructors.

Contributions of existing practice

- ❖ Teachers' work in addressing students' needs, tailoring curriculum experiences and direct instruction secured positive outcomes for learners.
- ❖ Teachers mediated the limitations of self-paced and text-based instructional activities and their take-up by students.
- ❖ Teachers made links for the students between the classroom and the workplace, hence enhancing the prospect of transfer of knowledge.
- ❖ Teachers' expertise in both content and pedagogy is valued by learners and value-adds the development of the kinds of knowledge required for flexibility and adaptability.
- ❖ Instructional practices such as the use of group work, simulated workplace tasks and problem-solving activities are likely to develop transferable knowledge.

Consistently, it was reported that the quality of educational encounters determined whether adaptability and flexibility are realised in students. It seems that group activities, individualised learning, resource-based activities, project work and teacher guided experiences, as well as combinations of classroom and workplace-based experiences, are likely to deliver outcomes associated with adaptability and flexibility. However, it is the *combination* of these experiences that are at the core of these outcomes. Hence, it is the quality of the 'enacted curriculum', something managed best by teachers with appropriate pedagogical knowledge and skills, that is central to the quality of learning and the prospect of securing the outcomes desired by industry, enterprise and individuals.

There is limited evidence that CBT itself is directly associated with the development of a skilful and adaptable workforce. Most of the factors identified in this investigation were associated with the broader movement for reform of vocational education and those practices which existed prior to CBT and remain unaffected by it.

Conceptually, the key antagonism between CBT and the development of adaptability and flexibility is vested in CBT's focus on outcomes, rather than process. This distinction raises concerns about educational orientation and practice. This antagonism manifests itself as follows.

- ❖ Standards based upon measurable performance de-emphasise the very processes of thinking and acting which make these performances possible and

which can most sensibly inform future performance (e.g. transfer and adaptability).

- ❖ The development of detailed national standards made the prescribed intents of education remote from the circumstances in which student performance was to be judged, thereby denying that local enterprises and individuals may have particular performance requirements.
- ❖ The process of the development of standards did not involve input from the individuals who would have to teach and assess against those standards (e.g. teachers and trainers).
- ❖ The means by which national curriculum prescriptions were imposed upon the training system and its clients was associated with mandation rather than processes consistent with developing teachers' commitment.
- ❖ The importance of approaches to instruction likely to secure skilfulness is downplayed by the need for flexibility in delivery, and learning that focusses on the attainment of measurable performance.
- ❖ The validity of mandated assessment processes must be questioned given their failure to address the qualities associated with adaptability and flexibility, and by the absence of appropriate moderation processes to give consistency in assessment

Put simply, the orientation employed for developing the educational intents denied the very thinking and acting which determined performance. The national focus and the means of implementation also misrepresented the complexity of vocational knowledge, its situatedness, the teaching and assessment of that knowledge, and the basis by which teachers commit themselves to their practice.

Recommendations

The recommendations advanced here are aimed at building on the contributions to adaptability and flexibility identified above.

Curriculum

Recommendations on curriculum are directed to two key areas: the kinds of intents and content, and the quality of the learning experiences.

Kinds of intents and content

- ❖ Objectives that emphasise process and values should be established in combination with objectives that are focussed on behavioural outcomes.
- ❖ Negotiation at the local level is required in the determination of objectives and detailed content.
- ❖ Broader statements of intent (aims and goals) and recommended content are best developed at the national level which is linked to certification. However, such statements should not preclude a capacity for local variation.

Quality of learning experiences

Accreditation processes should be used to emphasise the role in learning of factors such as the kinds of instructional activities and learning experiences likely to develop skilfulness.

- ❖ Combinations of instructional experiences should be given greater emphasis in curriculum planning and accreditation arrangements.
- ❖ Processes to determine the readiness of learners for instructional encounters (e.g. literacy and numeracy) are required if self-paced and other forms of independent modes of learning are to be adopted.
- ❖ The view of curriculum and its organisation needs to be extended to include consideration of the combination of integrated experiences.

Assessment

Recommendations on assessment are classified in terms of validity, reliability and incentives for learning.

Validity

- ❖ For assessment to be valid, the bases for judgement (e.g. objectives) need to consider the forms of knowledge which are to be assessed, the circumstances in which performance actually occurs, the need to assess both understanding as well as practice, and the dispositional attributes which are important and underpin good practice.
- ❖ Matters of complexity, authenticity and integration need to be considered more fully as criteria for the selection of approaches to assessment.
- ❖ Benchmarks other than behavioral objectives need to be considered and their negotiation needs to take into account an understanding of the situational factors.
- ❖ Integrated knowledge and skills for the performance of creative, and reflective and innovative tasks need to be developed to help ensure adaptability in a climate of changing work practices.

Reliability

- ❖ Measures to assist reliability in the decade of CBT focussed on the use of standards and outcome statements. Now with greater diversity of learning contexts, standards of reliability need to be considered to maintain the standing of judgements about student performance and certification within vocational education.
- ❖ While there may be differences in the detailing of intents against which assessment will be made, approaches such as moderation across a range of contexts will need to be considered in order to assist reliability.

Incentive

- ❖ Incentive is at the core of individuals' learning. Non-graded passes appear to remove a key source of incentive for learners. Hence, it is recommended that some form of graded assessment that measures the skills required for students to be adaptable and flexible be re-introduced to provide important incentives for learners.

Teachers' practice

Recommendations on teachers' practice are presented in terms of broadening and deepening of role and developing teachers' knowledge.

Broadening the teachers' role

- ❖ Teachers' roles necessarily need to be extended beyond that of being just implementers of content and curriculum intent developed elsewhere.
- ❖ Teachers need to be engaged as adapters, developers and researchers of both pedagogy and practice.
- ❖ Teachers must be given discretion in the management and interpretation of curriculum in order to determine the appropriate array of routine and non-routine experiences, the best integration of experiences, and effective combinations of independent, group and teacher-led experiences.

Deepening the role

- ❖ The valuing of pedagogic expertise, that is, an emphasis on instruction and learning, needs to be acknowledged hand-in-hand with vocational knowledge.
- ❖ Teachers must possess the appropriate expertise to furnish the experiences required to develop workplace adaptability and flexibility within learners.
- ❖ Teachers must possess a capacity to evaluate their impact on learning, and to refine and improve their learning processes.
- ❖ Hence, a greater emphasis on pedagogic principles and practice needs to be engendered within VET teachers.

Developing teachers' knowledge

- ❖ The broader and deeper role suggested above requires that the professional practice aspects of teachers' work be given due attention.
- ❖ Professional development activities such as maintaining currency and extending knowledge should emphasise pedagogic as much as vocational aspects of practice.

1 Introduction

The introduction of competency-based training (CBT) in the late 1980s was driven by a concern to improve the flexibility and adaptability of the Australian workforce in order to make it more globally competitive (Dawkins 1988). This initiative was linked to micro-economic reforms aimed at improving aspects of work practice in Australia's public and private sector enterprises (Dawkins & Holding 1987). It coincided with a move to reform vocational education provisions nationally. A key governmental goal for this reform that emerged at this time, and which persists, was for vocational education and training (VET) to assume a key role in developing a workforce capable of competing against imports and of producing competitive goods and services that are exportable. CBT was selected by government as the means to secure these goals and became central to this reform movement. Significantly, behavioural approaches such as CBT have long been the preferred instructional model in Australia's vocational education systems. For instance, behavioural objectives, top-down models of curriculum development, and assessment against benchmarks have been used since the inception of technical and further education (TAFE) in Australia (Stevenson 1989). However, with the training reform movement of the 1980s came a tightening of the formula for curriculum development and implementation. This was achieved through the development and endorsement of national standards, the use of regulated accreditation frameworks and assessment practices. In all, these reforms changed the ways in which VET curriculum was developed and implemented, and students' performances assessed. For example, the reforms, while reflecting the already existing criterion-based approach, reduced the multiple levels of assessment that were typically used (eg. fail, pass, credit, distinction) to two levels of performance (competent/not competent).

Much of the reform activity was linked to key institutional re-arrangements in the late 1980s and early 1990s. This era saw the development of national competency standards and moves towards national core curricula based on concerns for national uniformity and accountability. These national foci saw the emergence of key bodies such as the (now defunct) National Training Board (NTB), national curriculum committees (e.g. Australian Committee on Training and Curriculum [ACTRAC]) and the establishment of the Australian National Training Authority (ANTA). It has been argued that such institutional re-arrangements required the use of CBT to manage and make instructional arrangements accountable to national regulation (Lundberg 1997). However, changes in institutional arrangements (e.g. the collapse of the Accord) and government policy (e.g. the emergence of enterprise-based industrial agreements) are now contributing to the erosion of national industrial awards and the rise of highly specific national curriculum arrangements. Concerns have been expressed that national prescriptions cannot effectively capture State, regional, local and enterprise requirements and needs. Consequently, some of the arrangements associated with the introduction of CBT are now being

transformed. It is therefore timely to determine whether CBT secured the goals that were expected of it. The findings from such an evaluation should provide guidance for directions of change into the next millennium.

This project evaluated CBT in two States, Victoria and Queensland, in terms of the impact on the development and implementation of curriculum, judgements about students' knowledge, and its influence on the role of VET instructors. These concerns are addressed in three separate but inter-linked sub-projects.

In sum, the purpose of the overall project was to seek an understanding of the contemporary and likely future requirements for VET curriculum development, assessment and instruction, and to compare these with the antecedent conditions that were present at the time of the inception of CBT. The antecedent factors are therefore examined in each of the three sub-projects (see table 1 for a clear depiction of this integration). The processes used in curriculum development, implementation, assessment and instruction are also identified and evaluated, followed by an appraisal of the outcomes of the three areas of VET practice. Together, these three phases constitute the approach to evaluation devised by Stake (1976). A 'futures' phase was also adopted to point the way forward. Stake's three phases are depicted in table 1.

Table 1: Antecedent conditions, processes and outcomes (Adapted from Stake 1976)

Antecedent conditions <i>(What was the existing situation?)</i>	Approaches to curriculum development used Approaches to student assessment and outcomes Role of VET teachers
Process interventions (CBT) <i>(What processes were used?)</i>	Processes and outcomes of CBT curriculum development Assessment under CBT, its implementation and practice CBT implementation by VET teachers and trainers
Outcomes <i>(What has been achieved?)</i>	Success of CBT in meeting the needs of enterprises, industries and students (economic and social goals) Ability of CBA to furnish valid and reliable judgements The integration of CBT into VET instructors' practice

2 A decade of CBT

The move to implement a uniform system of competency-based training within the Australian vocational education system began in earnest in 1989 (Harris et al. 1995). The implementation followed a policy-focussed debate about a more skilful ('clever') country and concurrent government support for bi-partite deliberations between some employers and some unions about reforms to this country's vocational education system (Dawkins & Holding 1987; Dawkins 1988). The policy debate focussed on concerns about the nation's declining economic standing and proposed a set of interrelated policy initiatives which aimed at securing a more skilful and productive workforce. Hence, a platform of policies was developed aiming to reform workplace practices, to link remuneration increases to enhanced skilfulness and to reform the vocational education system. Baverstock (1996) suggests these reforms were responses to negative international appraisals of the nation's performance in the field of education and training. Within the platform of reforms was an orthodoxy, associated with perceptions of failure on the part of the education system, and the need for greater responsiveness to industry. This orthodoxy was aligned to changes in views about economic orientations which emphasised the market and private good as a precursor or super-ordinate to the common good and which were adopted by a Federal Labor Government. Indeed, overseas influences were seen to be important, and it was a bi-partite (industry/union) overseas study tour that resulted in the publication of *Australia reconstructed* which set up the basis of much of the reforms that followed. Successive governments from both sides of politics have supported many of these reforms.

The particular aim of the reform was to establish the nation's vocational education system in order to develop a more flexible and adaptable workforce: one that would be globally competitive. This goal required reform to workplace practices as well as to the way skilled workers were prepared and assessed (Dawkins & Holding 1987). To remedy perceived deficiencies in the existing provision of vocational education courses, CBT was proposed as a vehicle that could:

- ❖ quantify exactly what skills industry needs
- ❖ address problems associated with time-serving VET arrangements (particularly those associated with entry-level training and apprenticeship)
- ❖ permit the organisation and administration of vocational education to be closely linked to industry needs and, in particular, the reform of work practices referred to at the time as Award Restructuring (Dawkins 1988)

This initiative also included aligning vocational educational provisions with restructured industrial agreements, thereby placing vocational education in a parallel role to industrial relations reform. This trend has continued and is evident most recently in the linking of VET provisions with enterprise bargaining agreements. The decision in 1989 to implement a uniform national CBT approach to VET, therefore, was founded on the belief by government and 'industry' that

developing a skilled workforce through a centrally controlled and industry-mandated nationally uniform provision of VET ought to be the prime impetus for training. It was proposed by government and supported by its bi-partite collaborators in industry and the unions that such a move would enhance the quality of the Australian vocational education system. Because of industry support, the nation would see an increase in the commitment by enterprises to vocational education (Dawkins 1988; Harris et al. 1995). In a move characterising the governmental use of mandation which was repeated elsewhere, the Federal Labor Government invoked financial arrangements that resulted in tying funding for the States and Territories to their compliance to nationally uniform prescriptions (Lundberg 1997). Hence, goals for increasing both the quantum and quality of vocational education were to be realised through the uniform adoption of CBT. However, since 1989, much has changed in policy settings, goals for micro-economic reform, governing political parties and the structure and organisation of the nation's vocational education system. In sum, the institutional context within which CBT was to realise its goals has not been consistent or unidirectional in the last decade.

Consequently, an inquiry into the contribution of CBT and assessment to Australian VET has to go beyond comparing initial policy intents with outcomes. Rather, there is a need to also delineate the social, political and policy context within which CBT was introduced and to describe how this context has been transformed since 1989. In evaluating the contribution of CBT to Australian VET, judgements need to account for the contextual and institutional factors, policy goals and curriculum practice that have developed and subsequently been transformed over the 'decade of CBT' (1989–1998). It is therefore necessary to determine how and why new institutional frameworks, which shape the nature of curriculum and the work of instructors, have been established. Taking an institutional perspective, institutions, such as the VET systems, are seen as sets of regulatory norms that give rise to patterns of action. In this way, institutions constitute the social infrastructure which orders the behaviour of relevant social actors (both individuals and groups) and organises relations among them (Research School of Social Sciences 1995). This lends itself to a consideration of the relationship between CBT and the changing social context within which it has to interact and, indeed, CBT's contribution to changing the norms of the culture.

3 The investigation

The overall question for the investigation is:

How useful has competency-based training been as a model of curriculum development, assessment and instruction in securing the governmental goal of developing an adaptable and flexible workforce?

The research question focusses on whether the three areas of curriculum practice, curriculum development, assessment and teaching practice, have secured the key economic goal of developing a skilful and adaptable workforce capable of making Australia both import-competitive and successful in exporting its goods and services. This question suggests a basis for evaluating the contribution of CBT that is consistent with what was proposed by its governmental sponsors. This outcome might be stated as: *What evidence is there that CBT has contributed to the development of an Australian workforce which is adaptable and flexible?* This question focusses on the utility of CBT (its educational worth) and also invites consideration of its impact on institutional practice within the vocational educational system(s).

The particular focus of this investigation of the contribution of CBT is therefore found within three separate but interrelated areas of inquiry. These are the:

- ❖ efficacy of CBT as a model of curriculum
- ❖ utility, reliability and validity of a competency-based system of assessment
- ❖ influence of CBT on instructors' practice

To achieve these outcomes, it is necessary to capture the changing institutional context into which CBT has been implemented and its impact on changing institutional rules. CBT's contribution to the development of skilfulness¹ is the overall concern of the project as proposed in the central research question. However, the resolution of this question requires an appreciation of whether the implementation of CBT has changed institutional practice in ways that are consistent with this goal. In sum, the investigation has to identify the influence of CBT upon three interrelated areas of curriculum practice in terms of its impact upon (a) *changes in institutional practice* as well as (b) *its achievement of the educational goals for which it was proposed*. These lines of inquiry are richly interrelated. The three associated sub-questions are:

- (i) *In what ways has the CBT model of curriculum been able to address the needs of industry and enterprises and the aspirations and needs of Australians in VET?*

¹ Skilfulness here is accepted in its broadest meaning which includes the development of capacities (conceptual, procedural and dispositional) required to engage in a vocation. Vocation here is also taken at its broadest meaning (e.g. being a parent, a classical scholar or a plumber is practising a vocation). Activities of both of a routine and non-routine kind are included. Hence, they are transferable and desirable to individuals wishing to pursue their personal and career goals.

(2) *How have competency-based assessment practices been able to furnish information about individuals' achievements against benchmarks, thereby permitting judgements about student performance, credit and prior knowledge?*

(3) *How has the implementation of CBT influenced the practice of instructors in VET?*

These questions consider whether the CBT approach to curriculum is able to address the needs of 'industry' (which was its original intention, see Dawkins 1988), enterprises (with the emerging focus on those particular workplace sites), and those individuals who aim to realise their aspirations through vocational education. The first sub-question is, therefore, linked to curriculum development and raises issues of institutional practice and educational worth. So the focus here is upon how curriculum practice shaped by CBT has been able to secure for individuals the knowledge required for flexible and adaptable performance.

The second question focusses on assessment. The applicability of assessment practices under a competency-based system to identify, define and utilise appropriate benchmarks to advance reliable and valid judgements is of concern to students, employers, course accreditation bodies, and the vocational education system more generally. In particular, the feasibility of assessment practice to assess and determine whether individuals have the knowledge required to be flexible and adaptable is pertinent to the overall governmental goals. The Employment and Skills Formation Council (1988) claimed it is possible to discern difference in the quality of performance through competency-based assessment (CBA). Concerns about assessment inform several dimensions of the investigation, its educational worth, and influence on practice—that is, the degree to which changes have occurred in assessment practices—and whether CBA can furnish valid and reliable judgements about individuals' learning of the vocational knowledge required for skilfulness.

The third question addresses the degree to which the implementation of CBT has actually changed the practice of instructors within VET. Issues about the transformation of institutional arrangements and, in particular, ways externally mandated aspects of practice are likely to be adopted by both novice and experienced vocational instructors are the concern here. It also addresses the issue of whether CBT influenced practice in ways that are likely to develop the knowledge required for skilfulness.

In sum, these areas of interrelated inquiry require two levels of analysis:

- (i) to make judgements about CBT and to understand the changing institutional context within which it was implemented
- (ii) to determine whether the effects of CBT on curriculum practices are likely to result in developing adaptability necessary for a future workforce; in other words an appraisal of its educational worth

4 Methodology

The overall project reflects three interrelated areas of educational practice, curriculum development, assessment and instruction. Integration of the projects has been achieved through a review of existing literature, followed by empirical work. This work comprised gathering consolidated data of differing kinds from teachers, representatives of industry, enterprises, students and documents associated with aspects of CBT policy and practice. In each State, the focus is on the same two industries: Metals and Hospitality. These industries were chosen because of their differences. On the one hand, the Metals industry, which is predominantly trade-based, has been at the forefront of vocational education since its inception, while Hospitality, a service industry, is a relatively new training field. By focussing on these diverse industries, it is hoped that a more comprehensive picture of the effects of CBT on vocational education will emerge as a result of our research. Data gathering and its analysis within these industries focus on the investigation of:

- (i) the educational worth of CBT
- (ii) its influence on educational practice across the three sub-projects

Data were gathered in both metropolitan and non-metropolitan sites in Victoria and Queensland to reflect the diverse circumstances for the implementation and evaluation of this national initiative. In doing so, the importance of antecedent conditions was recognised because of the changing circumstances surrounding the situation as it existed prior to CBT and the circumstances and goals into which CBT was implemented. This analysis therefore seeks to understand contextual factors. For example, it maps the use of CBT and how that use differs across the two States. The different historical and contemporary developments in VET in Australian States and Territories makes it important that such research was conducted in more than one State. Therefore, collecting data from two States was particularly useful in illustrating and examining the implementation of CBT policy. A decade ago, VET was predominantly TAFE. Both Queensland and Victoria have had quite different experiences of vocational and post-compulsory education (e.g. in relation to the location of vocational education in separate secondary schools), and contemporary TAFE management is much more decentralised in Victoria than in Queensland. Moreover, although Victoria is more geographically compact, that State has a much larger population and more diverse industrial base than Queensland. The reason for conducting the research in the two States, however, was not to make a direct comparison between them but to use them as broad exemplars of regional differences within Australian vocational education. The use of non-metropolitan sources also aimed to include regional perspectives.

Moreover, the use of distinct but related means of analysis in the three sub-projects added considerable value to the findings. In particular, the different foci for analysis of CBT provided quite different viewpoints from which findings could be appraised. The sociocultural and cognitive approach used in the

curriculum sub-project uses strands of constructivist theory to examine curriculum as something which is experienced and likely to have particular consequences as a result of the kinds of activities and guidance that is provided. The assessment sub-project used cognitive theory to examine propositions about the ability of the competency-based approach to assessment in order to determine the development of expertise. The sub-project on teachers' roles used a sociological framework and focussed on changing institutional arrangements to understand how teachers' roles have been transformed under CBT. Collectively, these perspectives enrich not only the individual sub-projects but the deductions made across the projects.

This kind of analysis is important for informing future VET policy and practice. This is because it is necessary to understand both the circumstances under which CBT was introduced and the conditions that VET is likely to be called upon to address in the near future. Fundamental to this analysis, therefore, was an evaluation of the utility of CBT in addressing:

- ❖ the knowledge required in Australian workplaces at the commencement of the next century
- ❖ the capacity of CBT to address the industry goal of a skilled workforce
- ❖ the capacity of CBT to satisfy enterprise requirements of developing skilful and adaptable employees

5 Findings

Summary

The findings may be summarised as follows:

Comparisons between regions and industries in the application of CBT were complex because of:

- ❖ the difficulties in separating CBT from other influences
- ❖ the different bases that were used for the introduction of CBT nationally

Overall, it was found that, under CBT, there has been a tendency toward:

- ❖ fostering closer relationships between industry spokespersons and those in enterprises
- ❖ achieving uniformity through CBT, although this process has not been as rapid or easy as expected
- ❖ CBT meeting immediate enterprise needs (however, it is unclear whether enterprise satisfaction stems from CBT itself or associated initiatives)
- ❖ improved competitiveness, especially in terms of enterprise needs for multi-skilled workers (however, there is little evidence that CBT is responsible for the improvement)
- ❖ higher order outcomes and transfer of knowledge through current curriculum. Evidence of the direct contribution of CBT is quite limited, however

Sub-projects

The impact of CBT on curriculum processes

Industry needs and the CBT model of curriculum

The CBT model of curriculum has secured some adherence by VET providers to industry-mandated procedures, particularly through the centrality of the industry voices in determining course content and intents (aims, goals and objectives) and more uniform assessment practices. Accreditation procedures provided the means for externally derived demands to be implemented. Curriculum development processes have become more responsive to industry needs, albeit at the cost of teacher autonomy. These processes have closely aligned curriculum intents, content and some teacher activities to industry needs. This is evident in the reduction of a role for teachers in the development of curriculum intents and content, and measures aimed to maintain teachers' currency.

Despite the development of a national curriculum to produce uniform outcomes, the evidence suggests that teachers' interpretation and utilisation of the

curriculum are not the same. Importantly, much effort was expended by teachers in the development of a uniform national curriculum across the VET sector to manage a standard implementation process. However, it was only in those areas in which teachers felt the pressure of accountability that there was evidence of change. Perhaps the most commonly reported change was in assessment practices where work demands and press for uniformity was most widely apparent.

However, the prospect of achieving uniformity of outcomes in response to industry has been impossible to realise. There are different understandings of what comprises competency in different workplaces, different interpretations against standards, different levels of readiness of teachers and quite different circumstances in which the implementation of the curriculum, as well as judgements about competency, occur. In overview, in terms of industry needs and the CBT model of curriculum, the following were identified:

- ❖ changes were made to the curriculum development processes to respond directly to industry needs
- ❖ outcomes of the curriculum development process were changed from an 'internal' VET focus to one focussing upon industry/enterprise needs
- ❖ the role of industry in the determination of intents and content (the 'intended curriculum') was given precedence over that of teachers
- ❖ there has been an institutionalisation of industry/enterprise involvement in the curriculum development processes (industry training advisory bodies)
- ❖ measures have been implemented to secure teachers' industry currency (accreditation)
- ❖ there is evidence that current VET provisions are securing adaptable industry outcomes
- ❖ uniformity has not been achieved through the CBT model of curriculum, nor is it likely to be achieved
- ❖ a reliance on curriculum use and accreditation processes to secure responsiveness appears to be flawed as they have failed to secure commitment
- ❖ the use of uniform industry standards appears to not always reflect the needs of enterprises
- ❖ the use of specific behavioural objectives and detailed standards in the curriculum are not securing adaptability and flexibility amongst learners
- ❖ instructional processes, activities and means of engaging students, rather than specified outcomes and industry standards, have been identified as the means for developing robust industry knowledge

Enterprise needs and the CBT model of curriculum

Enterprise respondents claimed that multi-skilling, student competence and relevance of courses had all been enhanced by CBT. Access to additional trainees and reduced time in colleges and in courses, were also reported. Closer interaction with enterprises has led to outcomes appreciated by all client groups (industry, enterprises and students). However, this outcome is not wholly a product of CBT. The customisation of curriculum to enterprise needs is now emerging as a key goal for vocational education provisions and is also a key feature of the implementation of Training Packages. However, although the introduction of CBT has privileged external sources in the determination of intents, much of the emphasis on enterprises has arisen from a shift in focus to

enterprises as well as the implementation of market-based policies which cause providers to take account of enterprise needs.

Thus, enterprise needs have been met through the responsiveness of VET providers to external mandating. Outcomes have included improvements to teachers' currency, understanding of the requirements of enterprises through improved access to VET provisions, and work-based components of vocational education programs. These outcomes are largely the product of a curriculum development model that has an external focus and which attempts to secure compliance through the use of accreditation procedures.

In terms of securing the skilfulness and adaptability, and, particularly, the multi-skilling, desired by enterprises, the analyses suggest that it is the kinds of activities that the learners engage in both the workplace and the classroom which are likely to deliver these outcomes. Interestingly, this finding supports the sorts of arrangements that have traditionally been found in the apprenticeship system.

The focus of the curriculum process on relevance to particular enterprise needs is proposed as being central to views on the effectiveness of CBT in realising competitiveness. It seems that market-based provisions have been useful in enhancing competitiveness. Also, evidence of the efficacy of these arrangements could be found in enterprises continuing to employ apprentices and trainees and send them to the providers. A combination of experiences in the classroom and workplace (e.g. project work, group activities, teacher-guided activities and self-managed activities) seem from the data to be effective in securing the knowledge required for adaptability and skilfulness. However, it may well be the combination of experiences that is at the core of the utility of these arrangements. For instance, not all learners were able to manage the demands of self-managed activities. Hence, the effective qualities of the 'enacted curriculum', something managed best by teachers, is likely to be central to the quality of learning and the prospect of securing the outcomes desired by industry, enterprise and individuals. Also, concerns about the inadequacy of teacher support were reported in both the quantitative and qualitative data. In sum, the key findings about enterprise needs and the CBT model of curriculum follow.

- ❖ Interactions between enterprises and providers help to develop an understanding of enterprise needs.
- ❖ Providers are responding to external mandating (e.g. teachers' currency, improved access, work-based learning).
- ❖ The customisation to enterprise need is becoming evident across providers.
- ❖ Student competence is now increasingly being seen as relevant to the workplace.
- ❖ CBT has not itself provided an approach to instruction that can deliver skilfulness and adaptability in the form of multi-skilling.
- ❖ Instructional activities in classroom and workplace (e.g. project work, group activities, teacher-guided activities and self-managed activities) are seen as critical in the development of skilfulness and adaptability.
- ❖ The need for a greater consideration of learning experiences that deliver competitiveness and multi-skilling is emerging as an issue.
- ❖ With the exception of sourcing the intents and content of the curriculum externally, CBT itself has not delivered the majority of enterprise needs.
- ❖ There is little evidence that CBT itself has improved competitiveness.

Individual needs and the CBT model of curriculum

The currency of teachers' knowledge is proposed as being important for providing students with content knowledge that is transferable to the workplace. Accreditation arrangements that demand currency of teachers' knowledge were reported as pressing some teachers into enhancing their skills and being useful in meeting students' needs. This outcome appears to be a product of shifting curriculum decision-making from an internal to a more external focus of concern. Opportunities for individualised learning were provided through the use of self-paced approaches to instruction.

Students claim that the ability to apply basic skills and principles across different workplaces (e.g. the transferability of skills) is important. Hospitality students, in particular, supported this notion. Students saw the ability to transfer knowledge from the classroom to the workplace, as well as the ability to build on what they had previously learnt, as important. In consideration of process, students claim that transfer is underpinned by understanding and that understanding is secured through engagement in vocational education programs. Students also claimed that workplace learning experiences assist in the transfer of knowledge.

However, not all learners reported being able to manage the demands of self-managed activities. Concerns about the inadequacy of teacher support were reported in both the quantitative and qualitative data. Hence, the quality of the 'enacted curriculum', which we assert is something managed best by teachers, is likely to be central to the quality of learning and the prospect of securing outcomes desired by industry, enterprise and individuals. There were also repeated claims that content of courses was not relevant to workplace activities.

In sum, the findings about individuals' needs and the CBT model follow.

- ❖ The relevance of courses and outcomes is important if students are to develop transferable knowledge.
- ❖ Interactions between providers and enterprises help develop relevance.
- ❖ The lack of relevance in course content to workplace activities is a key concern for some learners.
- ❖ An ability to transfer basic knowledge from the classroom to the workplace is necessary and needs to be developed.
- ❖ The currency of teachers' knowledge is seen as crucial.
- ❖ Some learners favour opportunities for individualised learning.
- ❖ Some learners believe that resource-based learning and self-pacing inhibits learning, particularly when teacher support is lacking.
- ❖ Dissatisfaction with quality of the teaching/learning experience was a common complaint.
- ❖ There is limited evidence that CBT has resulted in skilfulness.

The impact of CBT on assessment practice

Since assessment (and the results and credentials which arise from it) is a prime motivator of staff and student activity, its control is also a powerful manager of change. The CBT movement has placed great emphasis on changing assessment practices to make them more uniform nationally and to ensure that these practices conform more rigidly with perceived industry needs as defined in competency standards. Despite this move for conformity, the findings of this

study demonstrate that curriculum design and teachers' practices retain a degree of diversity. While practices differ, the issues that surround assessment under CBT show a greater degree of uniformity across industries and States than for curriculum development or teaching. The findings for this sub-project can be summarised as follows:

- ❖ *Incentive*—Non-graded passes are seen as de-motivating by many students (and especially better students), teachers and employers, whereas what is required to develop expertise are high incentives to commit to learning.
- ❖ *Practice and understanding*—There has been a de-emphasis on theory and a re-emphasis on practice in assessment. This has increased opportunities for the development of routine skills but limited opportunities to apply and extend those skills in combination with theoretical concepts. Less tangible aspects of assessment such as attitudes and 'common sense' also tend to be neglected.
- ❖ *Authenticity*—The focus of assessment is on demonstrated competence in action and is more closely linked to 'real life' situations of work and more focussed on specific workforce needs.
- ❖ *Complexity*—There is little evidence in the data of assessment of problem-solving and creative abilities. Clearly this is of concern for workplaces which are under more or less constant change and where new products, new practices and new technology are being introduced at an increasing rate.
- ❖ *Integration*—The partitioning and assessment of learning into small modules is unlikely to bring about integration of knowledge that is required for expertise. More holistic, global and integrating assessment which accumulates within and across modules is called for.

The impact of CBT and teachers' practice

CBT has had a profound effect on the practice of instructors, but the effect in many cases has been indirect rather than direct. Moreover, one's assessment of the impact of CBT is dependent on how one sees the role of instructors. An important finding in this respect, in relation to the sample of TAFE and non-TAFE instructors who were interviewed for this project or who took part in focus groups, is that respondents tended to regard themselves as 'teachers' not 'instructors'. Such self-labelling is important to participants, they claimed, because the label 'instructor' implies a narrower role and range of professional duties than does the term 'teacher'. To them, the term instruction means face-to-face teaching and monitoring of students. Teaching is something that is much more complex and involves a wide sweep of activities that require the exercise of professional judgements and engagement with students, colleagues and stakeholders. Indeed, the distinction made between these two terms in many ways summarises the range of concerns that many participants, including some industry representatives and curriculum personnel, express about the impact of CBT on the role and practice of teachers. The range of concerns is summarised as follows.

Changes to instruction

- ❖ Since 1989 there has been a lack of input of educators into curriculum and assessment design.
- ❖ CBT encourages the measurement of specific aspects of learning which can be seen, in some respects, as disconnected from teachers' relatively holistic conception of teaching.

- ❖ CBT is often perceived as something akin to an administrative technology, a framework for VET delivery in purely behavioural terms, which lead to inappropriate restrictions in teaching practice.

Teachers' role

- ❖ CBT is associated with the production of specific knowledge (in the form of facts and know-how) and specific behaviours. However, respondents strongly held that outcomes of teaching and learning ought to be viewed in terms of 'process outcomes'.
- ❖ Teachers felt that the most important aspect of teaching and learning ought to be the development in students of the capacity to learn how to learn throughout their careers and their lives. Promoting such capacity was seen as the work of teachers not instructors.
- ❖ Changes that have occurred in teachers' practice since 1989 are viewed by them in terms of degree, rather than kind.

Teaching methods

- ❖ Diversification of teaching methods has occurred since the introduction of CBT with a shift away from teacher-centred instruction.
- ❖ Shifts have occurred from college-based face-to-face teaching, guided by the curriculum, to methods that place an increased emphasis on assessment.
- ❖ There has been an increased responsiveness by teachers to industry and enterprise needs with an expansion of workplace delivery and assessment.
- ❖ An increased need for student support has been noticed by teachers.
- ❖ Less importance is placed on the need for teachers to use their professional judgement limiting the range of teaching practices teachers use and the nature of their relationship with students in particular.

Impact on students/trainees

- ❖ The introduction of CBT has restricted the relationship between teachers and students.
- ❖ Limited conceptions of the role of the teacher that are associated with CBT have resulted in different learning outcomes under CBT.
- ❖ Some teachers have noticed different and less personal social and educational formations of students.
- ❖ Too much emphasis on self-pacing and text-based materials has distanced students from their teachers.

Impact on teachers' work

- ❖ There is intense pressure on teachers to deal with change.
- ❖ An increase in sessional and contract employment has led to a decline in common understandings about good practice in teaching and standards of performance.
- ❖ Teachers feel that their special skills do not lie just in their vocational knowledge but in their skills and relationships as teachers.

Developing adaptability and flexibility

A range of factors within the current vocational education provisions was identified as being likely to promote adaptability and flexibility. However, the

degree to which CBT itself can be identified as contributing to this outcome is limited. More significant were the contributions of the broader VET reform movement and the instructional and curriculum practices that existed prior to the introduction of CBT and have continued to this time.

Curriculum

Factors identified in the development of curriculum associated with securing adaptability and flexibility follow.

- ❖ The determination of intents and content by industry/enterprises assists in making the goals for, and content of, courses relevant.
- ❖ Currency of teachers' workplace knowledge assists learners to develop transferable knowledge and fosters the transfer of that knowledge to applications other than those practised in college settings.
- ❖ Experience in the workplace is important for developing knowledge applicable to workplace settings. Developing understanding and procedures are particularly associated with workplace performance.
- ❖ Instructional approaches when combined can provide students with access to problem-solving and the reinforcement of knowledge. For example, working with others provides access to knowledge which learners may not discover themselves. Other approaches known to develop adaptability and flexibility include group learning, self-directed learning, and teacher-guided activities.
- ❖ Project work, self-directed learning and combinations of on- and off-the-job experiences also have potential to develop the forms of knowledge which permit transfer, hence adaptability and flexibility.
- ❖ Teachers and industry/enterprises desire assessment processes that reflect and encourage adaptability.

Assessment

Factors that were identified in the research associated with making judgements about students' attainment of the knowledge (assessment) required for flexibility and adaptability follow.

- ❖ The need for performance indicators to reflect the complexity, depth, routineness and non-routineness of the vocational activities being assessed has been highlighted.
- ❖ There is a need to assess ability to engage in non-routine activities, more than just routine activities.
- ❖ There is a need for assessment to account for situational factors, with validity through functional application. For instance, on-the-job assessment is likely to be useful to indicate validity in terms of authenticity.
- ❖ Dispositional factors (values, attitudes) need to be assessed as these qualities underpin the thinking and acting processes valued by government, industry and enterprises alike.
- ❖ Multiple integrated learning outcomes need to be assessed as these reflect requirements for work practice (e.g. project work as the basis for assessment).

Teachers' work

The following factors associated with teachers' work that were perceived by informants as contributing to the development of adaptability and flexibility were identified.

- ❖ Valuing a strong student focus in organising appropriate experiences, tailoring arrangements to the needs of learner, and providing support and guidance underpinned by currency of knowledge are important aspects of teachers' work.
- ❖ Teachers' involvement in selecting and providing appropriate kinds of experiences is essential in order to determine how best these experiences should be organised for a given group or individual.
- ❖ Currency of knowledge about different kinds of workplaces is required to develop appropriate experiences for students.
- ❖ Direct engagement by teachers with students is required in order for teachers to understand student needs and to organise experiences and guidance appropriate to their level of development.
- ❖ It is important for teachers to identify and determine learner needs at the situational level and to respond to those needs.

Contributions to developing adaptability and flexibility

Drawing on the findings outlined above, the contributions to developing adaptability and flexibility have been identified as coming from three sources: CBT itself, the broader reform movement, and existing factors. The contributions of each of these factors are as follows.

The contribution of CBT itself

- ❖ The development of national industry standards shifted the focus for determination of curriculum intent and contents to outside the vocational education system and institutionalised this arrangement. This has enhanced the relevance of what was taught.
- ❖ Accreditation and registration processes have mandated the use of external advice and teacher currency. This has enhanced the currency of course content and the goals for learning.

The contributions of the broader reform movement

- ❖ Increased interactions between enterprises and VET providers have developed clearer goals and content for courses through shared understandings.
- ❖ Increased opportunities for students to engage in workplace experiences have facilitated their potential to develop appropriate knowledge.
- ❖ Self-paced and text-based learning experiences have pressed some learners into higher orders of learning. For others, though, the lack of appropriate support is inhibiting their achieving this.
- ❖ Greater emphasis on individualised learning has resulted in meeting learners' needs.
- ❖ Broadening of the teachers' role through market-based reforms has provided a richer basis for teachers to develop as curriculum makers and instructors.

The contributions of existing factors

- ❖ Teachers' work in addressing students' needs and tailoring curriculum experiences and direct instruction continue to secure positive outcomes for learners.
- ❖ Teachers mediating the limitations of self-paced and text-based instructional activities is critical to the success of this method of delivery.
- ❖ Teachers making the links between the classroom and the workplace greatly enhances the prospect of transfer for students.
- ❖ Teachers' expertise in both the content and pedagogy necessary in the gaining of knowledge is crucial to the development of flexibility and adaptability.
- ❖ Teachers' well-developed instructional practices are crucial to the success of learning strategies such as group work, simulated workplace tasks and problem-solving activities: strategies most likely to develop transferable knowledge.

Consistently, it was reported that it was the quality of educational encounters that determine whether adaptability and flexibility are realised. It seems that group activities, individualised learning, resource-based activities, project work and teacher-guided experience, as well as combinations of classroom and workplace-based experiences, are likely to deliver outcomes associated with adaptability and flexibility. However, it is likely that the combination of the experiences is at the core of the utility of these arrangements. Hence, the quality of the 'enacted curriculum', something managed best by teachers, is likely to be central to the quality of learning and the prospect of securing the outcomes desired by industry, enterprise and individuals.

There is limited evidence of linkages between CBT itself being directly associated with the development of a skilful and adaptable workforce. Most of the factors identified in this investigation refer to factors associated with the broader movement for reform of vocational education and those which existed prior to CBT and remain unaffected by it.

Conceptually, the key antagonism between CBT and the development of adaptability and flexibility is in CBT's focus on outcomes rather than process. Process concerns are ones of educational orientation and practice. This antagonism manifests itself as follows.

- ❖ Standards based upon measurable performance de-emphasise the processes of thinking and acting which make these performances possible and which can most sensibly inform about future performance (e.g. transfer and adaptability).
- ❖ The development of detailed national standards makes the intents of education remote from the circumstances in which performance is to be judged, thereby denying the requirements of performance at the local level (e.g. requirements of local individuals and enterprises).
- ❖ The development of standards is disengaged from the individuals who would have to teach and assess against those standards (e.g. teachers and trainers).
- ❖ The means by which national curriculum prescriptions are imposed upon the training system and its clients is associated with mandation, rather than by processes which develop teachers' commitment to them.
- ❖ The importance of approaches to instruction likely to secure skilfulness is downplayed.

- ❖ the validity of mandated assessment processes is currently being jeopardised by the failure of CBT, in its present form, to address the qualities associated with adaptability and flexibility

Put simply, the current form of CBT delivery and assessment overlooks much of the thinking and acting which determines effective flexible and adaptable performance. The current national focus towards greater uniformity, the sole use of behavioural objectives and the undervaluing of pedagogic expertise misrepresents the complexity of vocational knowledge, its situatedness, the teaching and assessment of that knowledge and the basis by which individuals commit themselves to their practice.

6 Recommendations

The recommendations set out below are focussed on the future and should be seen as changes to advance CBT in ways that will ensure it more fully meets the government's intended agenda; that is, that CBT contributes not only to the development of a skilful workforce but to one that is also flexible and adaptable. Recommendations are presented under three headings associated with the separate areas of inquiry.

Curriculum

Recommendations for revision of curriculum practice can be categorised into three kinds:

- (i) *The intended curriculum*—The sole use of behavioural objectives unduly limits the realisation of vocational education goals. Therefore, process and value objectives ought to be considered alongside behavioural objectives. Where matters of performance are routine and observable, then behavioural objectives may suffice. However, non-observable phenomena such as procedures and understanding may not be easily measurable in the same way. Complex forms of thinking and acting require the use of process objectives to emphasise the centrality of learning activities in developing the knowledge required for adaptability and transfer. While there is a need to continue determining curriculum intents from external sources such as enterprises and industry, input from teachers and other individuals is likely to be useful in providing appropriate experiences. Teachers need to have a role in developing curriculum as well as in implementing programs in order for deliberations to be informed by professional practice.
- (ii) *The enacted curriculum*—Modification to curriculum accreditation and registration processes could be useful in pressing for a consideration of teaching process factors, particularly those required for developing adaptability and skilfulness. Accreditation processes could specify the kinds of experiences that students should undertake in order to engage learners in the kinds of thinking and acting which are likely to lead to outcomes associated with performance; for example, problem-solving activities of routine and non-routine kinds, integrated workplace and classroom experiences, guided learning to secure understanding and higher orders of procedural knowledge and group activities embedded in vocational activities. Moreover, accreditation and registration processes should specify how learners' readiness to engage in self-directed activities can be appraised and monitored, as well as the level of guidance required for those who are not ready for autonomous problem-solving.
- (iii) *The experienced curriculum*—Accreditation and registration procedures might also benefit by focussing on how student engagement in activities and appropriate levels of support can be understood. In addition, a heightened

Assessment practice

Changes to assessment procedures are required to develop and maintain reliability and validity.

- ❖ *Validity*—For assessment to be valid, consideration also needs to be given to the forms of knowledge to be assessed, the circumstances in which performance actually occurs, the importance of assessing understanding, as well as practice and dispositional attributes. In short, validity needs to be considered in terms of benchmarks upon which judgements about students' abilities to be flexible and adaptable can be made. It is therefore recommended that benchmarks other than behavioural objectives are considered and that more negotiation about the detail of those benchmarks (e.g. situational factors) be included.
- ❖ *Reliability*—Measures of reliability in the decade of CBT focussed largely on the use of standards and outcome statements. With greater diversity of contexts for learning and applications, precautions for reliability need to consider the standing of judgements about student performance and the standing of certification within vocational education. While there may be differences in the detailing of intents against which assessment will be made, approaches such as moderation across a range of contexts will need to be considered in order to assist reliability. Again, professionally prepared educators are more likely to provide these kinds of outcomes.
- ❖ *Incentive*—The project data suggests that the issue of incentive be at the core of individuals' learning. The use of non-graded passes may remove a key incentive for VET learners. The kinds of knowledge required to develop flexibility and adaptability require effort on the part of the learner. Removing graded passes may have removed an incentive for students to engage to their maximum ability in the difficult and demanding act of learning these forms of knowledge. It is therefore recommended that graded assessment be introduced to provide an important incentive for learners.

Teachers' practice

The key recommendations for teachers' practice are about providing the bases for teachers to deliver to students the kinds of opportunities, experiences and guidance that will enable them to develop their adaptability and flexibility.

- ❖ *Broadening teachers' role*—Teachers need to be more than implementers. They need to be engaged as adapters, developers and researchers. Teachers need to have more discretion within the enacted curriculum to allow them to act upon their judgements of the best integration of routine and non-routine experiences and the best combination of independent, group and teacher-led experiences. This deeper involvement will allow teachers better to determine and respond to individuals' needs, and to guide them in developing their adaptability and skilfulness.
- ❖ *Deepening teachers' role*—The value of pedagogic expertise needs to be acknowledged hand-in-hand with vocational knowledge. The development of complex forms of knowledge is not straightforward. The contemporary role of teachers as guides in the construction of learners' knowledge requires them to

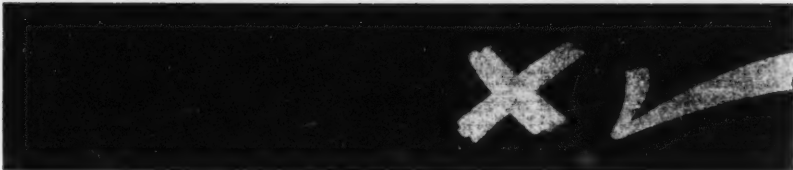
have different kinds of expertise to that required for didactic instructional strategies. Moreover, teachers need to understand how to use effectively combinations of experiences within different learning environments. Thus a greater emphasis on pedagogic principles and practices is needed.

- ❖ *Developing teachers' knowledge*—Developing broader and deeper roles for teachers requires them to give more attention to the professional practice side of teachers' work. This means that professional preparation for vocational educators should be both thorough and comprehensive, and that professional development should emphasise pedagogic as well as vocational aspects of practice.

In overview, the range of experiences, activities and support provided mostly by teachers, and comprising existing instructional and curriculum practice, are those most likely to be instrumental in the development of flexibility and adaptability. CBT and the reform movement have overlooked many of these contributions. However, the findings in this project show that they are the kinds of contributions that need to be strengthened and prioritised in future arrangements.

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